

CLAIMS:

1. Receiver (10) arranged to simultaneously receive at least a first (S1) radio frequency signal having a first frequency band (1) and a second radio frequency signal (S3) having a second frequency band (3) that is at least partly overlapping the first frequency band (1), the receiver comprising:
 - 5 - frequency down-conversion means (32,33) for frequency down-converting the at least first (S1) and second radio frequency signals (S3) to at least a first (S2) and a second (S4) lower frequency signal;
 - multiplexing means (34) for sequentially multiplexing the at least first (S2) and second lower frequency signals (S4) into a frequency multiplexed signal (S5).
- 10 2. Receiver (10) according to claim 1, wherein (10) the receiver further comprises an analogue to digital converter (35) for digitizing the frequency multiplexed signal (S5).
- 15 3. Receiver (10) according to claim 2, wherein the receiver (10) further comprises demultiplexing (36) means for demultiplexing the digitized frequency multiplexed signal (S6) into at least a first (S7) and a second (S8) signal.
- 20 4. Transmitter (20) arranged to simultaneously transmit at least a first radio frequency signal (S15) having a first frequency band (1) and a second radio frequency signal (S16) having a second frequency band (3) that is at least partly overlapping the first frequency band (1), the transmitter (20) comprising:
 - signal multiplexing means (41) for sequentially multiplexing at least a first (S10) and a second (S11) signal into a frequency multiplexed signal (S12);
 - 25 - demultiplexing means (48) for demultiplexing the frequency multiplexed signal (S12) into at least a first (S13) and a second (S14) lower frequency signal;
 - frequency up-converting means (44,45) for frequency up-converting the first lower frequency signal (S13) into the first radio frequency signal (S15) and for frequency up-

converting the second lower frequency signal (S14) into the second radio frequency signal (S16).

5 5. Transmitter (20) according to claim 4, wherein the at least first (S12) and second (S11) signals are digital signals.

6. Transmitter (20) according to claim 5, wherein the multiplexing means (41) comprises a digital to analogue converter (53) for converting the sequentially multiplexed first and second digital signals (S12d) to a frequency multiplexed signal (S12).

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7. Transceiver (50) comprising a receiver (10) that is arranged to simultaneously receive at least a first radio frequency signal (S1) having a first frequency band (1) and a second radio frequency signal (S3) having a second frequency band (3) that is at least partly overlapping the first frequency band (1), the receiver (10) comprising:

- 15 - signal conversion means (32,33) for frequency down-converting the at least first (S1) and second radio frequency signals (S3) to at least a first (S2) and a second (S4) lower frequency signal;
- multiplexing means (34) for sequentially multiplexing the at least first (S2) and second lower (S4) frequency signals into a frequency multiplexed signal (S5);

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8. Transceiver (50) according to claim 7, the transceiver further comprising a transmitter (20) that is arranged to simultaneously transmit at least a third radio frequency signal (S15) having a third frequency band (1) and a fourth radio frequency signal (S16) having a fourth frequency band (3) that is at least partly overlapping the third frequency band (1), the transmitter (20) comprising:

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- signal multiplexing means (41) for sequentially multiplexing at least a third (S10) and a second (S11) signal into a frequency multiplexed signal (S12);
- demultiplexing means (48) for demultiplexing the frequency multiplexed signal (S12) into at least a third (S13) and a fourth (S14) lower frequency signal;
- 30 - frequency up-converting means for frequency up-converting the third lower frequency signal (S13) into the third radio frequency signal (S15) and for frequency up-converting the fourth lower frequency signal (S14) into the fourth radio frequency signal (S16).

9. Method for receiving at least a first radio frequency signal (S1) having a first frequency band (1) and a second radio frequency signal (S3) having a second frequency band (3) that is at least partly overlapping the first frequency band (1), the method comprising the steps of:

- 5 - frequency down-converting the at least first (S1) and second (S3) radio frequency signals into at least a first lower frequency signal (S2) and a second lower frequency signal (S4);
- sequentially multiplexing the at least first (S2) and second (S4) lower frequency signals into a frequency multiplexed signal (S5).

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10. Method for transmitting at least a first radio frequency signal (S15) having a first frequency band (1) and a second radio frequency signal (S16) having a second frequency band (3) that is at least partly overlapping the first frequency band (1), the method comprising the steps of:

- 15 - sequentially multiplexing the at least first (S10) and a second signals (S11) into a frequency multiplexed signal (S12);
- demultiplexing the frequency multiplexed signal (S12) into at least a first (S13) and a second lower frequency signal (S14);
- frequency up-converting the first lower frequency signal (S13) into the first
- 20 radio frequency signal (S15) and the second lower frequency signal (S14) into the second radio frequency signal (S16).